CLAIMS

1. An integrated vehicle structure comprising:

an electronic site having a flexible substrate with electronic components mounted on the flexible substrate;

a plastic support structure defining a plastic mounting surface, the plastic support structure including a plurality of elongated ribs projecting from the plastic support structure and extending along side each other, each of the ribs having a side edge forming a portion of the plastic mounting surface;

the flexible substrate being mounted to the plastic mounting surface; and

a plurality of air flow passageways defined by adjacent ribs and the flexible substrate mounted to the adjacent ribs, the plurality of air flow passageways extending along the plastic support structure to provide convective cooling to the electronic components of the electronic site.

2. The integrated vehicle structure of claim 1, wherein the plastic mounting surface is vertically oriented.

3. The integrated vehicle structure of claim 2, wherein the air flow passageways extend vertically.

4. The integrated vehicle structure of claim 2, wherein the ribs and air flow passageways extend from an upper end of the plastic mounting surface to a lower end of the plastic mounting surface.

5. The integrated vehicle structure of claim 4, wherein the air flow passageways are unobstructed from the upper end to the lower end.

6. The integrated vehicle structure of claim 1, wherein the electronic site has electronic components mounted to both sides of the flexible substrate, and wherein a portion of the electronic components are positioned within one of the plurality of air flow passageways.

7. The integrated vehicle structure of claim 1, wherein the plastic mounting surface is non-planar.

8. The integrated vehicle structure of claim 1, further comprising metal blocks positioned in at least one flow passageway to conductively cool an electronic component.

9. The integrated vehicle structure of claim 1, further comprising a fan providing forced convection in the flow passageways.

10. The integrated vehicle structure of claim 1, further comprising a cover positioned over plastic support structure to protect the electronic site.

11. The integrated vehicle structure of claim 1, further comprising a metal support structure defining a metal mounting surface.

12. The integrated vehicle structure of claim 11, wherein the metal mounting surface is non-planar.

13. The integrated vehicle structure of claim 11, wherein the metal mounting surface exists in a first plane and the plastic mounting surface exists in a second plane, the first and second planes being generally parallel.

14. The integrated vehicle structure of claim 11, wherein the two mounting surfaces are co-planar.

15. The integrated vehicle structure of claim 11, further comprising means for attaching the flexible substrate to the plastic mounting surface, and wherein the attaching means permits movement of the flexible substrate relative to the attaching means to accommodate different coefficients of thermal expansion between the plastic support structure and the metal support structure.

16. The integrated vehicle structure of claim 11, further comprising a second electronic site having a second flexible substrate with second electronic components mounted to the second flexible substrate, the second electronic site connected to the metal mounting surface.

17. The integrated vehicle structure of claim 16, wherein the metal mounting surface is flat and the second electronic site is single-sided.

18. The integrated vehicle structure of claim 16, wherein the metal mounting surface defines a hole and the second electronic site is double side populated, the hole receiving an electronic component.

19. The integrated vehicle structure of claim 16, wherein the first and second electronic sites are electronically connected by a flexible jumper.

20. The integrated vehicle structure of claim 16, wherein the metal support structure is a cross car structure of a vehicle.

21. The integrated vehicle structure of claim 11, wherein the flexible substrate of the electronic site is also mounted to the metal mounting surface of the metal support structure.

22. An integrated vehicle structure comprising:

an electronic site having a flexible substrate with electronic components mounted to the flexible substrate;

a metal support structure defining a metal mounting surface existing in a first plane;

a plastic support structure defining a plastic mounting surface existing in a second plane, the plastic support structure including a plurality of elongated ribs projecting from the plastic support structure and extending along side each other, each of the ribs having a side edge forming a portion of the plastic mounting surface; and

the flexible substrate being mounted to both the plastic mounting surface and the metal mounting surface.

23. The integrated vehicle structure of claim 22, further comprising a plurality of air flow passageways defined by adjacent ribs and the flexible substrate mounted to the adjacent ribs, the plurality of air flow passageways extending along the plastic support structure to provide convective cooling to the electronic components of the electronic site.

24. The integrated vehicle structure of claim 23, wherein the ribs and air flow passageways extend from an upper end of the plastic mounting surface to a lower end of the plastic mounting surface.

25. The integrated vehicle structure of claim 24, wherein the air flow passageways are unobstructed from the upper end to the lower end.

26. The integrated vehicle structure of claim 23, wherein at least one rib includes an aperture linking adjacent air flow passageways.

27. The integrated vehicle structure of claim 22, wherein the first and second planes are generally parallel.

28. The integrated vehicle structure of claim 22, wherein the first and second mounting surfaces are co-planar.

29. The integrated vehicle structure of claim 22, further comprising means for attaching the flexible substrate to the plastic mounting surface, and wherein the attaching means permits movement of the flexible substrate relative to the attaching means to accommodate different coefficients of thermal expansion between the plastic support structure and the metal support structure.

30. The integrated vehicle structure of claim 22, wherein the metal support structure is a cross car structure of a vehicle.

31. The integrated vehicle structure of claim 22, wherein the plastic support structure is a center stack structure.